

Forecasting Into the Digital Age

By David Sheets

Digital technology has gradually taken over many aspects of our lives over the past couple decades, affecting everything from telecommunications to music recordings and wrist watches. Last fall, the digital age reached the forecast operations at the Quad Cities National Weather Service office.

New Forecast Process

This came in the form of a new forecast process called IFPS (Interactive Forecast Preparation System), which is part of the modernization of the NWS. It is a program that operates within the AWIPS (Advanced Weather Interactive Processing System) computer system that has been in use at NWS for several years. IFPS is revolutionary in that it has dramatically changed the way forecast information is created. Instead of focusing on the written forecast, forecasters now center their forecast process on the creation of graphical depictions of predicted weather. These are essentially weather maps, somewhat similar to the colorful computer graphics used by television meteorologists.

Gridded Forecasts Coming Soon

These forecast “grids” consist of the basic weather elements including temperature, dew point, wind, and sky cover going out seven days into the future. Additional forecast grids showing precipitation type (rain, snow, sleet, etc), precipitation amounts, snow amounts, and wind chill/heat index are also created. The traditional written forecasts are still created, but the process has been automated in the IFPS forecast

process. The program uses the information from the digital grids to create the forecast wording, which undergoes minor editing by the forecaster and is then sent out, appearing much as it did in the past.

While the digital graphical forecasts are not yet available to the public, another new product containing this new digital forecast information has been issued by our office since mid January.

The Regional Digital Forecast (RDF) is a table of forecast weather parameters in three and twelve hour intervals. An example of this product can be seen on page 2. The most recent RDF can be found on our internet site at:

<http://www.crh.noaa.gov/data/DVN/RDFDVN>

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REGIONAL DIGITAL ZONE FORECAST
NATIONAL WEATHER SERVICE QUAD CITIES IA IL
521 PM CST SUN FEB 10 2002

IAZ040>042-051>053-111121-
BENTON IA-BUCHANAN IA-DELAWARE IA-DUBUQUE IA-JONES IA-LINN IA-
INCLUDING THE CITIES OF...ANAMOSA IA...CEDAR RAPIDS IA...
DUBUQUE IA...INDEPENDENCE IA...MANCHESTER IA...VINTON IA
521 PM CST SUN FEB 10 2002

CST          \      MON 02/11/02      \      TUE 02/12/02      \
15 18 21 00 03 06 09 12 15 18 21 00 03 06 09 12 15 18 21 00 03 06

MN/MX              12              34              21              34              16
TEMP              28 23 18 14 15 25 32 34 33 29 25 22 22 27 32 33
DEWPT             16 10  6  5  9  9  8  8 10 12 15 18 21 23 24 25
RH               60 57 59 67 77 50 36 32 38 49 65 84 96 85 72 72
WIND DIR          N  NW  NW  SW  S  SW  SW  SW  SW  W  W  W  NW  NW  NW  W
WIND SPD          13  9  5  3  6 14 21 21 17 19 21 19 19 22 23 20 14 12 11 11
WIND CHILL        17 13 11        6 13 20 24 22 16 10  7  7 13 19 21
CLOUDS            CL CL CL CL CL CL SC B1 B2 B2 B2 B1 B1 B1 B1 B1 B1 B1 B1
POP 12HR              0              0              0              0              0
QPF 12HR              0              0              0              0              0
SNOW 12HR           00-00           00-00           00-00
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Example of the digital forecast in tabular format that is currently available from the NWS Quad Cities. This example is only a portion of the forecast product, and shows information tailored for a part of eastern Iowa. More information on this product and how to interpret it can be found on our web site at www.crh.noaa.gov/dvn/WeatherandForecasts/rdfexplain.htm.

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Expect the digital graphical forecasts to begin appearing on our website sometime later this year.

Just as it the digital age forever changed many aspects of our day to day lives, the digital forecast process will likely drastically change the way NWS forecast data is disseminated, viewed and used by the public and partners of the National Weather Service. We'll keep you updated on the progress of this exciting program through our website and future issues of *Four all Seasons*.



New Look to Our Web Page

If you have not visited our web page for a while, you may be in for a surprise. We, along with all NWS offices, have redesigned our web sites to provide easier access to our suite of products and information. Phase 1 introduced a new top banner and menu style. Phase 2, planned for April 2002, will deploy a common set of watch, warning, and advisory graphics as well as a forecast tool, that is searchable by city, state or zip code. Our site's address is:

<http://www.crh.noaa.gov/dvn/>

-COOP NEWS-

New Snow Measurement Training Coming Your Way Soon

By Ted Stimach

Our office has taken on a mission of helping our COOP observers report snow during the winter season. This is being carried out through observer training with new instructional material and newly created snow measuring equipment.

New Tools Available

We will try to make an appointment with each observer during our normal round of visits. This may be during the routine annual visits or at a specially arranged time. During the visit, we will show a 22 minute video made for the National Weather Service for our observers. It will explain the whole process of observing and reporting snow. Secondly we will offer observers a new snow measuring stick (made by the Iowa State Penitentiary system) and snow board (made by our NWS office). The new stick will allow our observers to measure the snowfall and snow depth more accurately. The snow board will also aid in measuring the 24 hour snowfall. Lastly we'll provide a demonstration with the new snow tools to reinforce what the video was trying to convey.

What You'll Need

In case you do not have a VCR where we can meet, we will bring along a portable combination TV/VCR to show the video. All the you will need to provide is an electrical outlet and a seating arrangement. So far, around 15 observing sites have been visited this Winter/Spring season.



If you have not been visited and would like one soon, please give us a call on our 800 telephone number.

Your Rainfall Reports Help the River Forecast Center

By Rick Arkell and Jeff Zogg

Every morning at 6 am, 365 days a year, the North Central River Forecast Center (NCRFC) in Chanhassen, MN, just outside Minneapolis, opens for business and starts processing thousands of incoming river stages and precipitation reports.

The center shares a building with its meteorological counterpart, the Minneapolis NWS forecast office. It is one of 13 river forecast centers located throughout the country that send river forecast guidance to 120 forecast offices. The forecast offices, in turn, review the forecasts and then send them out to the public. Each river forecast center, or RFC, is responsible for a large area, usually well over 100,000 square miles, while each forecast office is responsible for a smaller area, usually around 20,000 square miles. The NCRFC forecasts for an area of

The NCRFC forecasts for an area of 300,000 square miles.

300,000 square miles across 9 states in the Upper Mississippi, St. Lawrence, and Hudson Bay drainages. This area includes all or portions of 20 forecast offices, including the Davenport office.

One of the primary sources of precipitation reports coming into the river forecast center every morning is the cooperative network. Cooperative observers call in their reports either directly into the RFC using ROSA, or through the Davenport forecast office, which then relays them to the RFC. Other precipitation reports come from automated gages. These include Automated Surface Observing System (ASOS) sites operated by the NWS, Automated Weather Observing System (AWOS) sites operated by the FAA, and Data Collection Platforms (DCPs) operated by the Army Corps of Engineers and U.S. Geological Survey. Precipitation estimates are also



Area served by the North Central River Forecast Center.

made from the NWS WSR-88D radar network. Of all these sources, the cooperative reports are usually considered to be the most reliable; they are the “ground truth”.

A quality control program, called MAP for Mean Areal Precipitation, checks the incoming data at the RFC every 15 minutes. At 715 am, the NCRFC runs its river models to make preliminary forecasts, which are then compared with preliminary forecasts from the U.S. Army Corps of Engineers. At 740 am, a final quality control run is made of precipitation data, and at 805 am, the river model programs begin their final run. By 830 am, the river models are finished, and each hydrologist takes the forecast results for his or her basins of responsibility, fine tunes them using any late precipitation reports and river stage data, and sends them out as guidance to the forecast offices by 10 am. The forecast offices then review the forecasts, make any last minute changes, and send them out to the public as official forecasts by 11 am.

In addition to daily river forecasts, other specialized forecasts made by the RFCs include low flow forecasts during dry periods, ice advisories on the navigable rivers in the winter, inflow forecasts for reservoirs, and snowmelt forecasts in the spring.

River forecasts are important, since public and private

officials use them in flood control, daily activities, and navigation decisions. Since early morning precipitation reports are important input into the river forecast, we appreciate receiving them. **If you are a cooperative observer who reports precipitation, it is much appreciated when you can get your report to us by 730 am.** This allows us and the NCRFC to make the most of it, and *makes your daily observations even more worthwhile.*

A Look Back at Winter of 2001-2002

By David Sheets

Winter usually means bitter cold weather and plenty of snowfall here in the Midwest. The winter season of 2001-2002 lacked both and entered the records as the 5th warmest in the Quad Cities since records began in the 1870s. Now that the climatological winter season months of December, January, and February are behind us, we'll take a closer look at how this period compared to previous years.

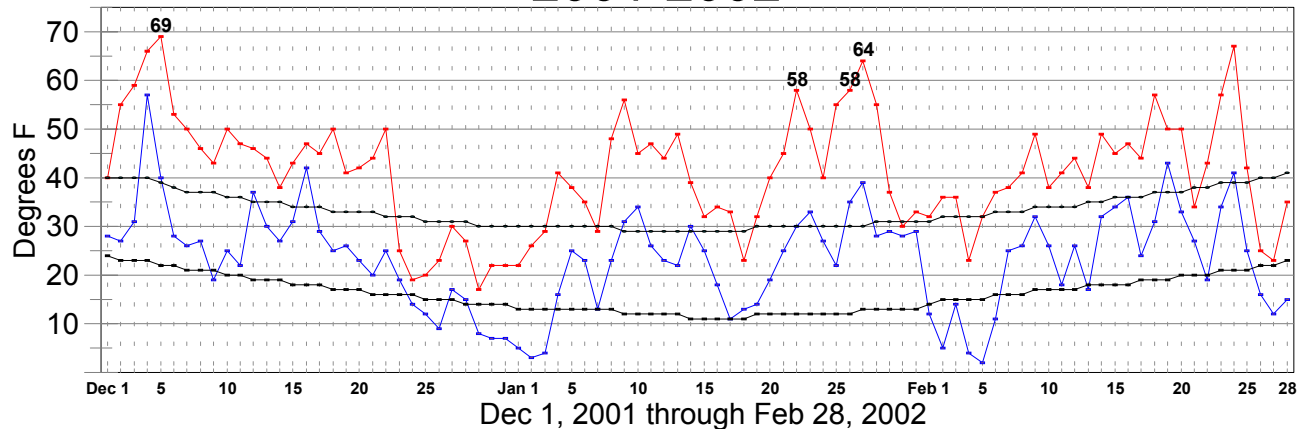
How Warm Was It?

At the Quad Cities airport in Moline, the average was 32.2 degrees. This was well above the normal of 24.8 degrees. The average daily high temperature was 41 degrees, which was 7.3 degrees above normal.

Winter 2001-2002 5th Warmest Since Records Began in the 1870s

The highest temperature was a balmy 69 degrees, reached on December 5th. In an average winter there are about 44 days with high temperatures below 32 degrees. This past winter, there were only 22 days in which highs failed to reach the freezing mark. The average low temperature was 23.3 degrees, well above the normal of 16.2. The lowest temperature was 2 degrees, reached on the 5th of February. In a typical winter, the mercury dips below

Winter Temperatures at Quad Cities 2001-2002



Daily highs and lows for winter 2001-2002. Top line is daily high, shown in red on color version and daily lows traced by heavy line below highs, shown in blue in color version. Solid thin black lines are 30 year average daily highs and lows. New record highs are labeled in black.

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zero on 17 days. In this atypical winter, a sub zero reading failed to occur.

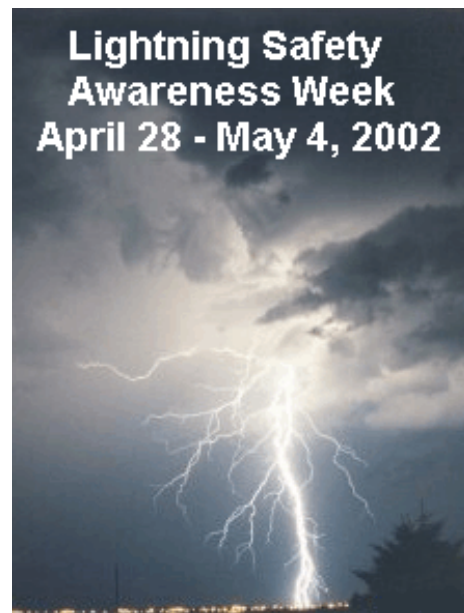
air of the season brought sub zero overnight lows on the following 3rd and 4th. Many new record cold overnight low temperatures were observed around the region on the morning of the 4th. While wintry weather of this magnitude is not unusual for March, it is remarkable this year following the relatively mild previous three months.

It Did Actually Snow

The snowfall total was 14.5 inches, which was well below the normal of 23.9. Of this 14.5 inches, 9.2 fell in one storm on January 30 through 31st. The rest of the snow was measure from numerous snow events through the three month period. In fact, there were only 2 other days with one day snow totals exceeding 1 inch. These were 1.4 inches on January 16th and 1.3 inches on February 27. Looking at liquid precipitation and liquid equivalent of snowfall, the total for the period was 3.01 inches, falling well short of the normal of 5.29 inches.

Better Late Than Never?

As of the time of this writing, winter had since made a significant reappearance. March came in like a lion with a major snowstorm on the 1st and 2nd. A total of 8.5 inches of snow fell during those two days, which was followed by bitter cold temperatures. The coldest



Watch for further information on our web site.

It's Severe Weather Season!

By Andy Ervin

The temperatures are warming and we've already had some stormy weather this spring. It's time to keep that weather radio handy, brush up on your weather safety, and keep that phone close at hand!

If you see severe weather happening, storm damage, or flooding conditions, we need you to call us! Spotters, and COOP observers are an incredibly important part of the NWS severe weather program. Spotter classes will be available throughout the spring. You can check our website for a complete listing of free classes. One will be near your hometown sometime soon.

Be sure to **call the NWS** if you witness:

Winds of 45 mph or greater. 58 mph is severe.

Hail of any size. 3/4 inch is severe.

Rotating wall clouds, funnels, or tornadoes.

Flooding: Ditches, creeks, rivers.

Storm damage: Downed limbs, trees, power lines, structural damage, etc.



Tornado damage in Buchanan County, Iowa May 11th, 2000.

Your Input is Appreciated

Since our first edition of *Four all Seasons*, we have received some positive input from our readers. A few of your suggestions have already been incorporated into our publication. This newsletter is considered a work in progress and we are open to any comments you may have on how it will better serve you.

We'd like to hear from you if you have an idea for a story or any questions about observing and reporting weather, or anything about what we do at the NWS.

Our e-mail address is listed below. Thanks again to those who have helped improve this publication.

-The Editors

Four all Seasons is a publication of the National Weather Service in Davenport Iowa. This newsletter is available in color at our website listed below. It is, however, optimized for viewing as print on paper. We suggest you make a hard copy of the on-line version in pdf format for best viewing.

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